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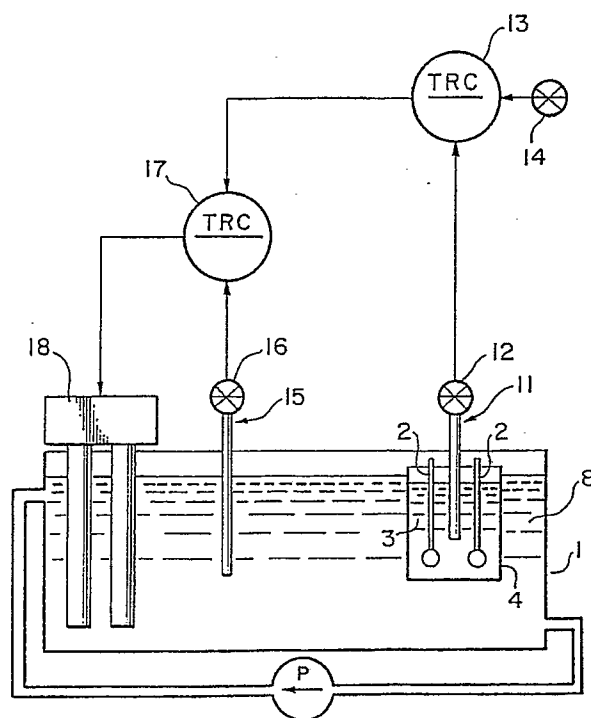
(54) **Temperature controlling apparatus.**

(57) Apparatus for controlling, with a microprocessor, the temperature of a fluid sample (3) in a liquid bath (8) over a wide temperature range. The device is operative to measure the temperatures of the sample (3) and the bath (8); to determine a desired temperature of the bath (8) according to a first function of the first difference between a desired sample temperature and the measured sample temperature when the absolute value of the first difference is greater than a predetermined value and according to a second function of the first difference when the absolute value is not greater than the predetermined value; and subsequently to limit the desired bath tempera-

ture thus determined to the desired sample temperature plus a given value when the second difference between the desired bath temperature and the desired sample temperature is greater than the given value and to the desired sample temperature minus the given value when the second difference is less than the negative of the given value. The device heats or cools the bath (8) as a function of the third difference between the desired bath temperature determined and limited as described above and the measured bath temperature to effect a difference of zero.

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FIG. 2





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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	PATENT ABSTRACTS OF JAPAN vol. 13, no. 391 (P-926)(3739), 30 August 1989; & JP - A - 1140210 (TOKYO RIKAI KIKAI) 01.06.1989 * whole document *	1,2,8,9	B 01 L 7/02 G 05 D 23/19
A	WO-A-8 602 227 (AMERICAN HOSPITAL SUPPLY) * abstract; page 3, line 25 - page 4, line 28; page 15, line 11 - page 18, line 4; page 23, lines 1-16; page 23, line 29 - page 24, line 12; figures 2,7 *	1,2,8,9	
A	PATENT ABSTRACTS OF JAPAN vol. 11, no. 362 (P-640)(2809), 26 November 1987; & JP - A - 62137537 (CHICHIBU CEMENT) 20.06.1987 * whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 01 L 7/00 G 05 D 23/00 G 01 N 25/00
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 06-04-1991	Examiner BEITNER M.J.J.B.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			